BIG LAKE ALTERNATIVE PLANS

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T5J 1G4
February, 1987
File No.: 8835-17

BIG LAKE

Alternative Plans

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I. INTRODUCTION

The Edmonton Metropolitan Regional Planning Commission has been involved in a comprehensive planning study for Big Lake and its surrounding shoreland area. This study has been designed to culminate in a Management Plan that can be implemented by a number of federal, provincial, regional and local authorities, as well as local landowners and other private groups and individuals.

The Edmonton Metropolitan Regional Planning Commission (E.M.R.P.C.) is one of ten regional planning commissions within the Province of Alberta. Established under the Planning Act, the E.M.R.P.C. is composed of elected officials. These elected officials are members of the four rural and fifteen urban municipalities within the planning region. In addition, the Commission maintains a professional support staff for the conduct of its duties.

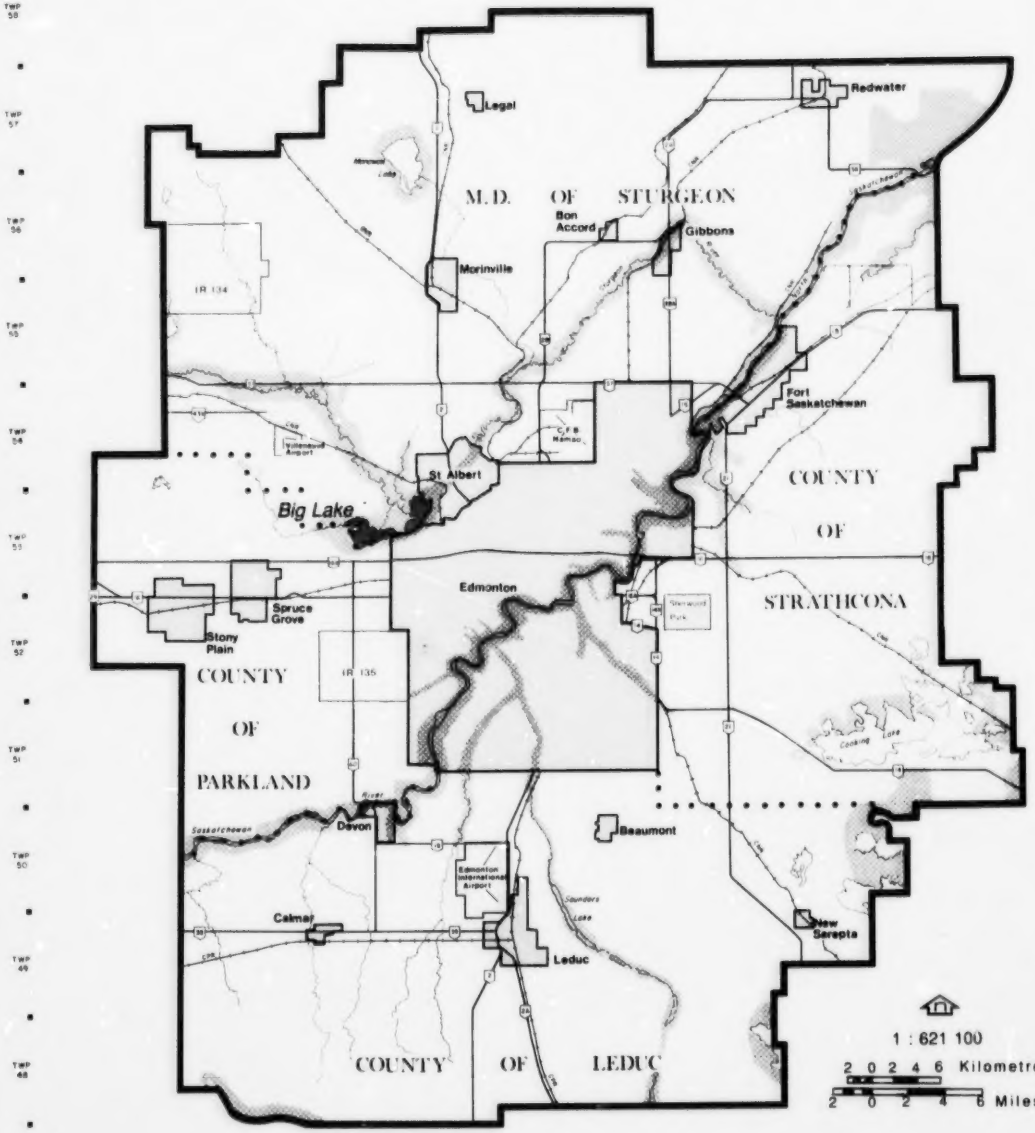
The E.M.R.P.C. planning region, centred on the City of Edmonton, encompasses 6,670 square kilometres (2,576 square miles) and has a population of over 750,000 people. The regional setting of Big Lake, within the E.M.R.P.C. planning region, is shown on Map 1.

During the course of the Big Lake planning study as much relevant information as possible has been gathered, analyzed and interpreted. A final plan, based upon this information and the informed opinions of the study participants, is the main object of this study.

This approach involves federal departments and agencies, such as the Canadian Wildlife Service; Provincial departments and agencies, such as the Fish and Wildlife Division of Alberta Forestry, Lands and Wildlife, Alberta Environment, Alberta Recreation and Parks, Alberta Culture, and Travel Alberta; regional authorities, such as the E.M.R.P.C. and the sewer and water service commissions; the local municipalities of the Cities of Edmonton and St. Albert, the County of Parkland and the Municipal District of Sturgeon; private industry, such as oil companies; landowners; groups, such as members of hunting lodges country clubs; and Ducks Unlimited, Canada; and, the public at large. The participants and the approach are outlined on Figures 1 and 2.

The approach concentrates on determining the capacity of the lake and shoreland to withstand change in use. This type of approach has been necessary because eventually a state may be reached where the natural lake and shoreland environment could be placed in jeopardy if too much, or the wrong type of change is allowed to occur.

Figure 2 outlines the manner in which this comprehensive planning approach has proceeded. As indicated, there have been public meetings right at the beginning and throughout this entire process.



Map 1
REGIONAL SETTING

Nature Conservation / Recreation

• • • Rural Boundary

Source: E.M.R.P.C. Regional Plan, Policy Reference, Map 3

Big Lake Study

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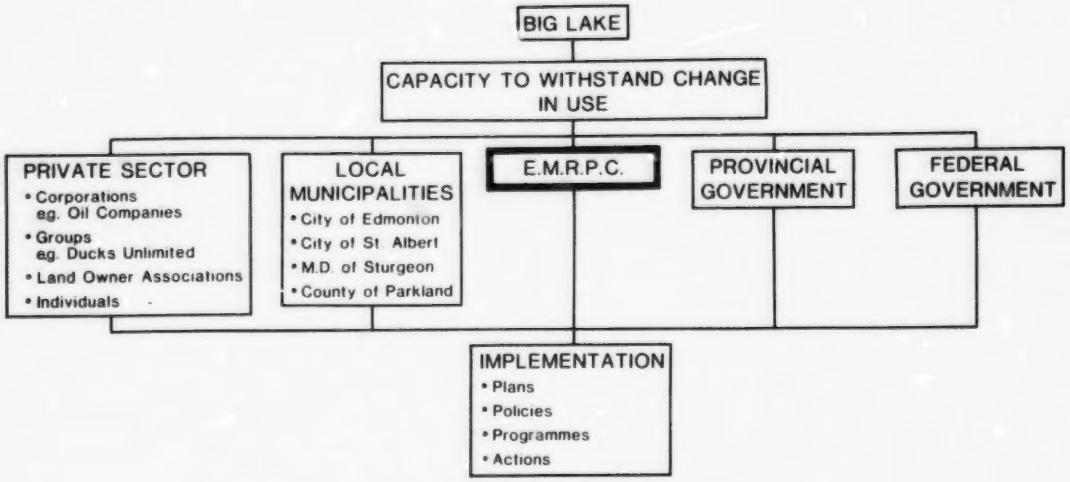


Figure 1

PARTICIPANTS, BIG LAKE MANAGEMENT PLAN

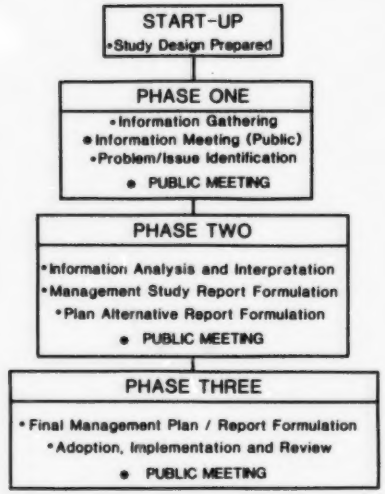


Figure 2

PLANNING APPROACH, BIG LAKE MANAGEMENT PLAN

This report is the fourth in a series. As outlined in figure 2, phase two of the planning approach includes the formulation of alternative plans. Based upon detailed analyses and interpretations of biophysical and socio-economic information, the alternative plans will be the subject of public review and input. Upon completion of this review process, a final management plan will be prepared. It is anticipated that the alternative plans will become the basic components of a final management plan for Big Lake and its surrounding shoreland.

As mentioned, the alternative plans are based upon more detailed information. If additional background information is required, the reader is referred to the Big Lake Background Report: The Management Study (the findings and conclusions of the Management Study are contained in Appendix 1 of this report).

II. ALTERNATIVE ONE

Maintenance/Conservation Alternative

GOALS

1. To maintain and conserve Big Lake's present role as a largely unknown natural/agricultural area in the metropolitan region.

2. To ensure that minimal lake or land use change occurs.

OBJECTIVES

1. To allow for minimal change in lake or land use, by ensuring that any proposed change is in complete harmony with Big Lake's natural area importance and environmental sensitivity.

2. To maintain existing agricultural use, in all municipalities, through strict land use control/zoning.

3. To conserve all valuable habitat areas for existing and future wildlife populations, by minimizing public use, access and physical disturbances.

4. To protect all environmentally sensitive areas for overall ecological balance, by discouraging public use, access and physical disturbances.

5. To maintain the existing visual character and environmental importance of the area, by prohibiting physical disturbances to the shoreline and backshore areas.

6. To encourage the longer term phasing-out of extractive operations, through liaison with private industry.

7. To ensure, through communication and negotiation, as well as legislation and policy, that appropriate change occurs to existing utility and transportation facilities.

8. To organize and co-ordinate the local public and private interests affecting Big Lake and its shoreland, by working with local landowners, local interest groups and affected local industries.

9. To conserve Big Lake's natural area/agricultural role, through provincial and regional legislation and/or policy, and to emphasize land use control at a local level through municipal plans, policies and by-laws.

LAKE USE POLICIES

1. Lake Surface Management

   Big Lake has been identified as an important area for the production and staging of waterfowl. In order to ensure that this primary use of the lake remains in its present state, it is recommended:

(a) that existing public access points at Big Lake remain, and

(b) that no additional public access be developed.

2. Waterfowl Enhancement

Waterfowl counts at Big Lake conducted in 1964, 1976, 1985 and 1986 have shown a decrease in bird population numbers. In order to improve nesting and, to some extent, staging, it is recommended:

(a) that more nesting structures be constructed in both the east and west bays of Big Lake, through the co-operation of local fish and game associations, Ducks Unlimited Canada, Fish and Wildlife Division of Alberta Forestry, Lands and Wildlife, (the Canadian Wildlife Service of Environment Canada may also be involved); and,

(b) that the long term maintenance of these nesting structures become the primary responsibility of the local fish and game associations with the co-operation of Alberta Fish and Wildlife Division and Ducks Unlimited Canada.

LAND USE POLICIES

1. Areas Subject to Flooding

Big Lake acts as a natural storm water retention pond within the Sturgeon River Basin. In order to minimize the negative impact of flooding on local landowners, it is recommended:

(a) that all lands within the 1 in 100 year flood zone be designated in the Land Use By-laws of all four municipalities (in accord with the provisions of the Planning Act), for a use that prohibits all types of permanent or semi-permanent structures; and,

(b) that as private land becomes available for sale, that the Provincial Government (through Alberta Public Works, Supply and Services) embark upon a long term programme of land purchase within the 1 in 100 year flood zone; and

(c) that lands with a high parks and recreation potential (which may include flood prone lands) be considered for future purchase by the four municipalities.

2. Other Backshore Lands and Uses

The present role of Big Lake is one of a natural/agricultural area that is familiar to local residents, but largely unknown to the public at large. In order to maintain this local area emphasis, it is recommended:

(a) that all four municipalities, in accord with the provisions of the Planning Act, adopt Area Structure Plans and amend Land Use By-laws (if necessary) to ensure that existing lands be maintained as the dominant pattern of use, and that future change or development proposals that do not adhere to this existing pattern of land use be prohibited;

(b) that the Provincial Government embark upon a programme of acquiring an interest in lands through Conservation Easements, and that all Provincial Crown lands be designated as Natural Areas or Wildlife Sanctuaries;

(c) that existing municipal and provincial roads and highways be maintained in accord with normal maintenance operations, and that expansion of existing, or development of new transportation networks, be discouraged by municipal and provincial authorities;

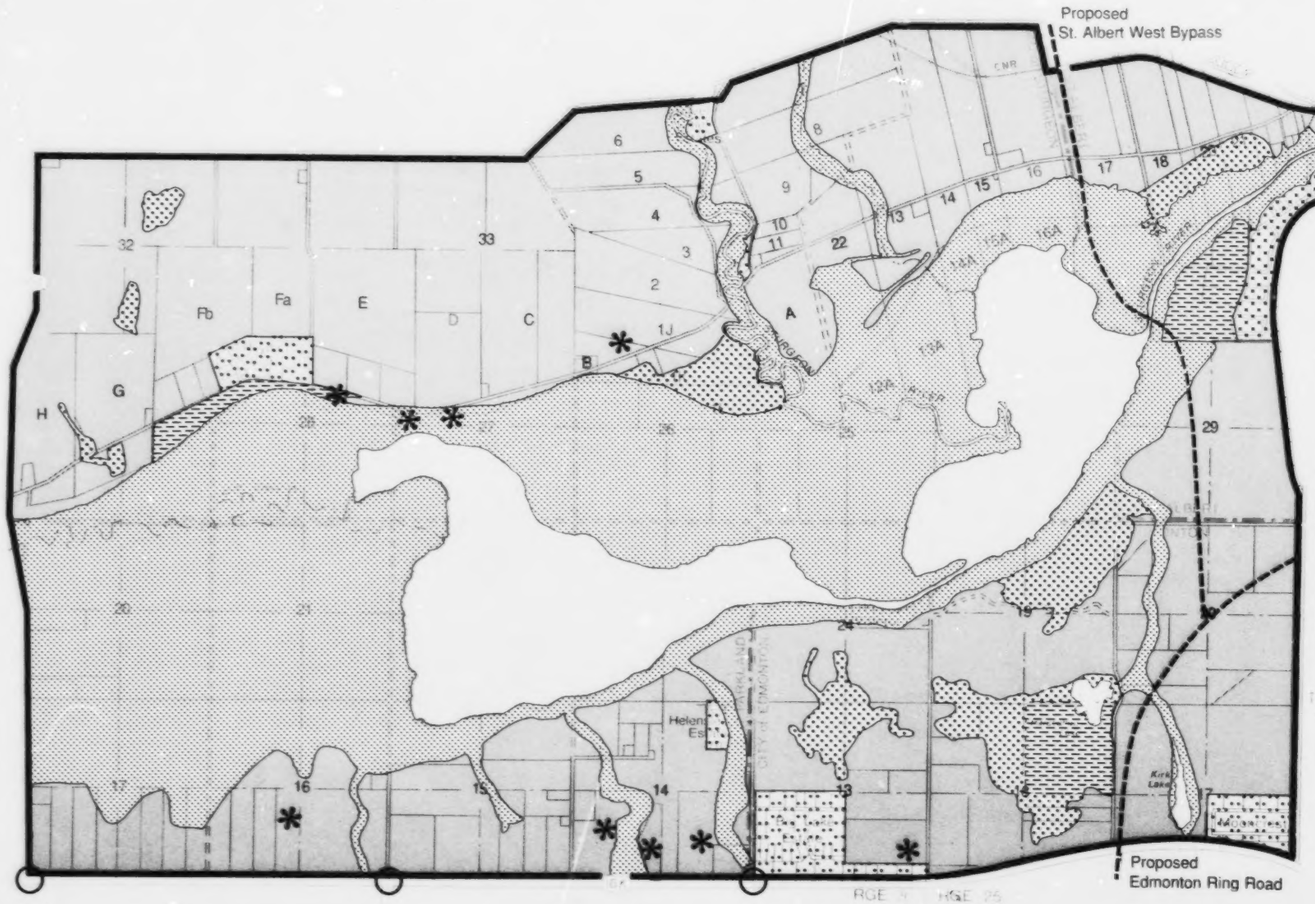
(d) that the present pattern of utility and energy resource pipelines, powerlines and related facilities be maintained, and that expansion, or development of new utility/energy resource networks, be discouraged by provincial and municipal regulation;

(e) that Private Resource Companies be contacted to ensure that existing oil and gas extractive activities be phased out naturally and that enhanced recovery methods be discouraged; and

(f) that the proposed St. Albert Bypass (a highway designed to cross the Sturgeon River between Big Lake and the developed portion so the City) be constructed with careful consideration of the area's environmental sensitivity.

LAND CLASSIFICATION AND ALLOCATION

Map 2 is a graphic expression of Alternative One: Maintenance/Conservation Alternative. The land classifications shown on the map are described in more detail in appendix 2.



Map 2

ALTERNATIVE ONE

Maintenance/Conservation Alternative

- Natural Conservation
- Natural Maintenance
- Agricultural/Rural
- Country Residential
- Commercial Recreation
- Industrial
- Historical Site
- Proposed Interchange

Big Lake

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IMPLEMENTATION

Implementing alternative one would require a minimum investment in terms of time, action or financial obligation. Constructing nesting structures could be financed through the Buck For Wildlife Program, Ducks Unlimited Canada and Wildlife Habitat Canada. The cost of nesting structures ranges from $30.00 to $250.00 depending upon size and type of construction. Maintenance is minimal - 30.00 per year.

The Provincial Government may be involved in purchasing lands as they become available (average selling price of poor farmland is in the $100.00 to $500.00 per acre range in the general vicinity of Big Lake, according to Edmonton Real Estate Board 1987 statistics).

The local municipalities would be affected through adopting by-laws, preparing an area structure plan, and enforcing by-laws. This expenditure of time and finances is not expected to go much beyond existing budgetary allotments, however, the responsibility of maintaining the "status quo" is an onerous task.

Local industrial, household and agricultural landowners would not be expected to make any effort or expenditure beyond normal operations. Private organizations and interest groups such as Ducks Unlimited Canada and the local fish and game associations would be involved in constructing and maintaining nesting structures, but based upon the above price ranges, this expenditure is expected to be minimal especially when compared to other types of waterfowl enhancement approaches.

EVALUATION

1. Advantages

   (a) The natural environment is maintained in its present state, or returned to a natural state, with some slight improvements, ie. nesting structures.

   (b) Minimal effort is required by all who are involved - investment in terms of time, action and financial obligation by both the private and public sectors, is minimal.

   (c) Local landowners may benefit by maintaining the local area emphasis of Big Lake - impact by the public at large, therefore, is expected to be non-existent.

   (d) Existing use of land remains the dominant pattern, which results in benefits such as the maximum amount of agricultural land being conserved.

2. Disadvantages

   (a) Big Lake is a very good example of fresh water succession, wherein the natural trend over time is for the lake to be infilled with sediment and vegetation. Maintaining this natural process may not be completely desirable since little

or no attempt is made to improve some of the areas present attributes (especially when viewed in terms of benefits for future generations). Significant opportunities for wildlife habitat enhancement/habitat management for compatible recreational opportunities would be lost.

(b) When minimal effort or commitment is required by all who are involved, there is no goal or vision for Big Lake for the future, and apathy is usually the end result of planning without a vision.

(c) Big Lake seems to have a large potential for use by not only Metropolitan Edmonton residents, but also for tourists and others such as bird watchers from outside the region. Maintaining a strict local area emphasis eliminates this potential.

(d) Maintaining and conserving existing land use may not be the best approach, especially if some areas have been identified for higher and better uses. These future uses may be of benefit economically, and socially to all who are involved.

III. ALTERNATIVE TWO

Environmentally Sensitive Recreation Development Alternative

G O A L S

1. To change the role of Big Lake, from a largely unknown natural/agricultural area in a metropolitan region, to an area that provides recreational opportunities related to its natural resources and environmental sensitivity.

2. To ensure that future lake or land use change is directed only toward those areas that can withstand change in use.

O B J E C T I V E S

1. To direct lake and land use change only to those wildlife/waterfowl and flood prone areas that can withstand change in use; and to plan this change in harmony with the area's agricultural importance, existing land use pattern, cultural/historical resources and infrastructure.

2. To conserve, through land use control, all valuable farmland, especially those areas with high soil quality and excellent farmland assessment combinations in agricultural communities, while recognizing shorter term agricultural conservation objectives in those areas that are not part of agricultural communities i.e. urban municipalities and isolated nodes in rural municipalities.

3. To conserve, through legislation, policy and action, valuable habitat areas for existing and future wildlife populations, especially waterfowl.

4. To develop, through private and public sector liaison and policy, low density recreational viewing and wildlife management opportunities related to those wildlife/waterfowl habitat areas that can withstand change in use.

5. To protect, through legislation, policy and action, environmentally sensitive areas for overall ecological balance, especially areas of groundwater discharge and recharge.

6. To develop, through private e.g. groups like Ducks Unlimited and public sector e.g. Municipal, Provincial and Federal Governments liaison and policy, low density recreational opportunities, such as nature viewing and interpretive walks, that are related to the area's unique and/or sensitive natural environments.

7. To maintain the visual attractiveness of the area, while at the same time, developing viewing opportunities and more public access to the Big Lake area in those areas that can withstand more intensive use.

8. To ensure, through liaison with the private sector, that any future change in resource extractive operations and installations will take place only in those areas that can withstand change in use.

9. To ensure, through legislation and policy, that any change to existing utility and transportation facilities, takes place in a manner which assists in the implementation of this environmentally sensitive development alternative.

10. To organize and co-ordinate local and provincial public and private interests affecting Big Lake and its shoreland (for the implementation of this alternative), by working with local landowners and interest groups, provincial based conservationist groups and organizations, and affected local industries.

11. To minimize financial obligation and investment by the public sector, through the adoption of this environmentally sensitive development alternative.

12. To allow for environmentally sensitive development through the formulation of provincial and regional policy guidelines, and the development of local municipal plans, policies and by-laws for plan implementation.

LAKE USE POLICIES

1. Lake Surface Management

Big Lake has been identified as an important area for the production and staging of waterfowl and appears, at the same time, to have a light recreational use potential related to waterfowl, other wildlife, and the natural environment in general. In order to conserve natural resources and also to allow for some low intensity recreational use, it is recommended:

(a) that the west bay of Big Lake become the main focus of waterfowl production by the implementation of suitable habitat development and habitat enhancement strategies;

(b) that the east bay of Big Lake become the main focus of light recreational use through the development of observation platforms, boardwalks and other related facilities, allowing the general public to view wildlife/waterfowl in an unobstrusive manner;

(d) that winter use of the lake for snowmobiling, cross country skiing (or any other type of transportation mode) be directed primarily to the east bay, through the adoption of appropriate municipal by-laws in accord with

the Municipal Government Act, and that proper sign posting at public access points be undertaken by municipal and provincial authorities;

(d) that additional public access be developed to Big Lake's eastern bay, initially in conjunction with the City of St. Albert, Urban Parks proposal since existing public access is currently focused within this municipality, and planning previously undertaken by the City supports this type of development; and,

(e) that a firearm discharge by-law prohibiting the discharge of firearms in or adjacent to Big Lake's eastern bay, be formulated by the M.D. of Sturgeon, in accord with the provisions of the Municipal Government Act.

2. Waterfowl Enhancement

Waterfowl counts at Big Lake conducted in 1964, 1976, 1985 and 1986 have shown a general decrease in bird population numbers. In order to improve this situation, and to enhance waterfowl viewing opportunities, it is recommended:

(a) that more nesting structures be constructed in both the east and west bays of Big Lake, through the co-operation of local fish and game associations, Ducks Unlimited Canada, Fish and Wildlife Division of Alberta Forestry, Lands and Wildlife, through the Wetlands For Tomorrow Program and through Wildlife Habitat Canada;

(b) that the long term maintenance of these nesting structures become the primary responsibility of the local fish and game associations; and,

(c) that the current plans by Ducks Unlimited Canada and Fish and Wildlife Division of Alberta Forestry, Lands and Wildlife under the Wetlands For Tomorrow Program, be expedited to develop waterfowl enhancement areas adjacent to both the east and west bays of Big Lake, providing Big Lake's flood protection function is not compromised.

L A N D U S E P O L I C I E S

1. Areas Subject To Flooding

Big Lake acts as a natural storm water retention pond within the Sturgeon River Basin. In order to minimize the negative impact of flooding on local landowners, it is recommended:

(a) that all lands within the 1 in 100 year flood zone be designated in the Land Use By-laws of all four municipalities (in accord with the provisions of the Planning Act), for a use that prohibits all types of permanent or semi-permanent structures; and,

(b) that flood prone lands, in addition to those needed for waterfowl enhancement, be purchased by the provincial government (Alberta Public Works, Supply and Services) to ensure that Big Lake's flood protection function will be maintained in the interest of the Crown, and that floods not be allowed to continue to create constant negative impact upon local landowners.

2. Other Backshore Lands and Uses

To change the role of Big Lake from a largely unknown natural/agricultural area, to one which allows light recreational development related to its natural resources and sensitive environment, requires a different focus in backshore lands as well as thuse immediately contiguous to the shoreline. In order to provide direction to this backshore change, it is recommended:

(a) that all four municipalities, in accord with the provisions of the Planning Act, adopt Area Structure Plans and amend Land Use By-laws, if necessary, to ensure that a circulation network consisting of trails, boardwalks, viewing stations, roadways, et cetera be developed as a co-ordinated planning approach for the planning area next to the lake;

(b) that the four municipalities, in co-operation with local landowners, local and province-wide interest groups, local industry, and provincial and federal government authorities (possibly through a non-profit organization), co-ordinate the development of a circulation network through linking existing easements, securing landowner use/access agreements, and land purchases (when necessary);

(c) that natural habitat corridors (such as those used by ungulates) be officially recognized and designated through a co-operative effort by Fish and Wildlife Division of Alberta Forestry, Lands and Wildlife and the Canadian Wildlife Service of Environment Canada, and that land purchases, in the right of the provincial or federal crowns, be undertaken if habitat protection appears to be threatened by other changes in land use;

(d) that the Provincial and Federal Governments embark upon programmes of acquiring an interest in lands next to Big Lake through Conservation Easements, Wildlife Habitat Canada, Nature Conserving Programmes, the Buck for Wildlife Program and through designating crown lands as Natural Areas or Wildlife sanctuaries;

(e) that existing municipal and provincial roads and highways be maintained in accord with normal operations, but that future changes and/or expansions be undertaken in accord with the overall circulation network planning;

(f) that the proposed St. Albert By-Pass (a highway designed to cross the Sturgeon River between Big Lake and the developed portion of the City) be constructed with careful consideration of the area's environmental sensitivity;

(g) that the high voltage powerline crossing the Sturgeon River at the outlet of the east bay of Big Lake (within the City of St. Albert) be relocated or buried by the utility company to reduce, significantly, bird mortality and to improve general aesthetics; and,

(h) that other utility and energy resource pipelines, powerlines and related facilities be maintained under normal operations, or phased out.

LAND CLASSIFICATION AND ALLOCATION

Map 3 is a graphic expression of Alternative Two: Environmentally Sensitive Development Alternative. The land classifications shown on the map are described in more detail in Appendix 2.

IMPLEMENTATION

Implementing alternative two would require investment in terms of time, action and financial obligations. All are involved from both the private and public sectors. Commitments are summarized on Table 1. The level of involvement in implementation is outlined on Table 1 by the dot pattern. Full dots meaning an active or high level of involvement; open dots meaning a low level of activity and/or involvement; and, partially filled dots meaning an intermediate stage between the high and low activity/involvement levels.

Municipal implementation responsibility is perhaps a good example to use to explain Table 1. As outlined, municipalities are responsible, (as shown by the filled-in dots), for implementing their portions of the plan through by-law adoption, [as outlined next to Policies 1(c), 1(a) and 2(a)]; co-ordinating and perhaps contributing in a realistic financial manner toward

boardwalk and trail development, [Policy 2(b)]; and, planning future roadway development in accordance with the circulation networks proposed [Policy 2(e)]. It is a well known fact that local municipal councils do not have the financial resources to invest in such undertakings as wildlife habitat improvement; acquiring flood prone land; or, moving utilities, (such as privately owned powerlines). This is also reflected on Table 1 by leaving blank spaces opposite policies 1(a), 1(b) and 2(g). Municipal implementation responsibility then, has been tailored to the realistic fiscal and personnel limitations of local municipalities. Regarding future by-laws that may be adopted and action plans that may be undertaken by municipalities, it is anticipated that a high level of co-operation between municipalities, and others responsible for implementation, will result. This can be accomplished by an agreement between the affected councils and others; a resolution formally passed by the affected councils; or, a more formal implementation measure such as a Joint General Municipal Plan. Co-ordination and co-operation are the keys to the implementation of the final plan for Big Lake.

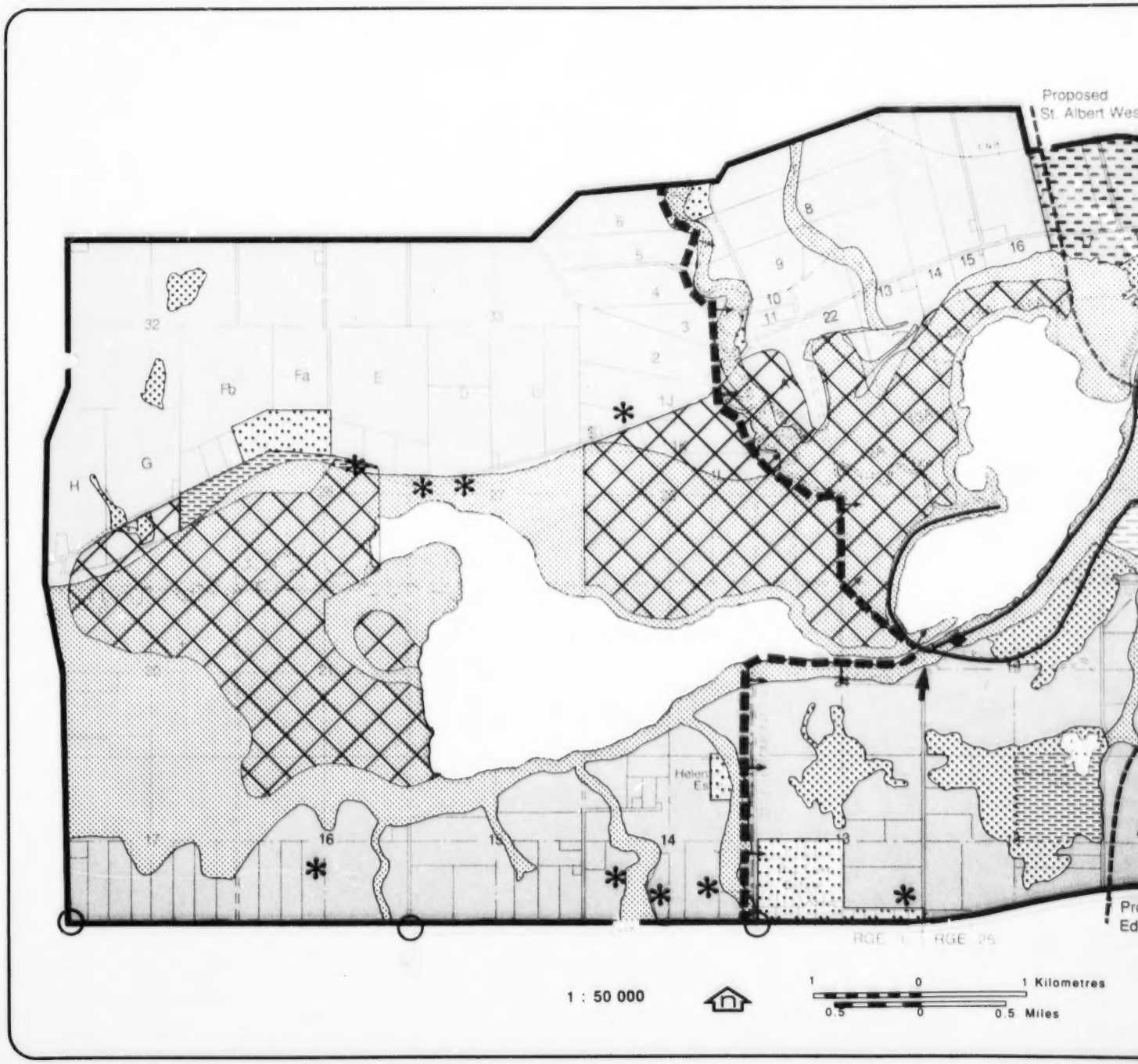
E V A L U A T I O N

1. Advantages

   (a) The natural Environment is not only maintained, but is also enhanced and, ideally, will be appreciated by more people.

   (b) The long term educational and conservationist attitude of future generations will be assisted by this type of planning.

   (c) Effort and commitment in terms of time, action and financial obligations are required by the *private and public* sectors, but they are intended to be within the constraints of the present-day down turn in the economy and resultant expenditure limits.


Proposed
St. Albert West
32
Fa
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13
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1 0 1 Kilometres
0.5 0 0.5 Miles

Map 3

ALTERNATIVE TWO

Environmentally Sensitive Recreation Development Alternative

- Natural Conservation
- Natural Maintenance
- Waterfowl Enhancement
- Agricultural/Rural
- Agricultural/Residential Reserve
- Agricultural/Industrial Reserve
- Country Residential
- Commercial Recreation
- Commercial Recreation Potential
- Industrial
- Trail/Boardwalk Development
- Firearm Discharge Prohibited
- Observation Area/Platform
- Historical Site
- Proposed Interchange
- Vehicular Access Point

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POLICY AREA		IMPLEMENTING BODIES AND LEVEL OF INVOLVEMENT MUNICIPALITIES / Reg. Plan. Comm. / Prov. Gov't / Fed. Gov't / Landowners / Ducks Unlimited / Local Industry / Local Interest Group / Prov. Interest Group / Non-Profit Organ.	FINANCIAL OBLIGATION ESTIMATE (if applicable, or if information available)
			LEGEND Level of involvement ● - High ◐ - Medium ○ - Low blank - no involvement
Lake Use	1(a)	○ / ○ / ● / ○ / ○ / ● / ○ / / /	Habitat Improvement: Wetlands for Tomorrow Program
	(b)	○ / ○ / ◐ / ◐ / ● / ○ / ○ / ● / ● / ●	Boardwalks cost $80-$100 per metre
	(c)	●	By-law adoption only, extra costs not anticipated
	(d)	◐ / / ● / ◐ / ○	Zoning; Land purchase; poor ag. land ($100.00 to $500.00 per acre)
	(e)	○	By-law adoption and enforcement, extra costs not anticipated
Waterfowl	2(a)	/ / ◐ / ◐ / / ◐ / / ● /	Nesting structures $30.00 to $250.00 per structure (last 10 years)
	(b)	/ / / / / / / ● /	$30.00 per year (10 yrs. maintenance before new structure needed)
	(c)	/ / ● / ○	Poor ag. land $100.00 to 500.00 per acre ($2 million for enhancement)
Land Use	1(a)	●	By-law adoption - no extra cost
	(b)	/ / ● / ○	Land purchase; poor ag. land $510 per acre (all flood lands 3.2 mill.)
	2(a)	● / ○ / ◐ / ◐ / ○ / / / ◐ / ◐ / ○	By-law adoption mainly-no extra cost
	(b)	● / ○ / ● / ◐ / ○ / ◐ / ◐ / ○ / ○ / ●	Price per metre: Boardwalks $80-$100; Trails $15-$100 (depending on type
	(c)	/ / ● / ◐	$100.00 to $500.00 per acre of poor ag. land (habitat ±$10,000)
	(d)	/ / ● / ●	In accord with programmes mentioned
	(e)	● / / ●	Normal operations
	(f)	/ / ●	No cost
	(g)	/ / / / / / ●	Exact cost unknown, estimated in tens of thousands of dollars
	(h)	/ / / / / / ●	Normal operations

Table 1: IMPLEMENTATION OF ALTERNATIVE TWO

(d) Local landowners will benefit from an improved circulation network in the area that will probably attract small numbers of conservationist wise public (people who appreciate the area for what it is).

(e) Overall, land use change next to the lake is in harmony with the existing pattern of use, and development and should be seen as a natural or logical progression from this existing pattern.

2. Disadvantages

(a) In some instances, there are significant commitments required by implementing bodies. These expectations may not be met either from the perspective of time and enthusiasm, or financially, since co-operation (instead of regulation and/or enforcement) is the key to this planning approach.

(b) Increased use of the area by the public at large may create a negative impact upon existing uses and affect landowner attitudes.

(c) Improved waterfowl habitat may increase local feeding in adjacent grain fields.

(d) Prohibiting firearm discharge during fall migration may severely restrict hunting in the area (to the detriment of one of Big lake's important recreational uses).

IV. ALTERNATIVE THREE

Recreational, Commercial and Residential Development Alternative

G O A L S

1. To change, in a significant manner, the role of Big Lake, from a largely unknown natural/agricultural area in a metropolitan region, to an area that not only provides passive recreational opportunities related to its natural resources, but also backshore development opportunities associated with intensive recreation, related commercial establishments and residential use.

2. To ensure that all future lake and land use change is directed toward those areas that can withstand change in use.

O B J E C T I V E S

1. To direct lake and land use change only to those wildlife/waterfowl, flood prone and agricultural/backshore areas that can withstand change in use; and, to plan this change in harmony with the area's existing land use pattern, cultural/historical resources and infrastructure.

2. To conserve, through land use control, valuable farmland in those areas with excellent soil quality and farmland assessment in agricultural communities, and to consider recreational, commercial and/or residential land use change options in those areas that are not part of agricultural communities, i.e. urban municipalities and isolated nodes in rural municipalities.

3. To conserve, through legislation, policy and action, the most valuable habitat areas for existing and future wildlife populations, especially waterfowl.

4. To develop, through private and public sector liaison and policy, recreational viewing and wildlife management opportunities related to those wildlife/waterfowl habitat areas that can withstand change in use.

5. To protect, through legislation, policy and action, environmentally sensitive areas for overall ecological balance, especially areas of groundwater discharge and recharge.

6. To develop, through private e.g. groups like Ducks Unlimited and public sector e.g. Municipal, Provincial and Federal Government liaison, a variety of recreational opportunities, such as nature viewing and interpretive walks that are related to Big Lake's unique and/or sensitive environments.

7. To maintain, through private and public sector liaison and policy, visual attractiveness of the area, while at the same time, developing viewing opportunities for more public access and an integrated shoreline and backshore circulation/access system throughout the study area.

8. To ensure, through liaison with the private sector, that any future change in resource extractive operations and installations will take place only in those areas with appropriate locational and/or site characteristics, and that consideration be given for the development of more public awareness through such facilities as a resource extractive interpretive centre.

9. To ensure, through legislation and policy, that any change to existing utilities and transportation facilities takes place in a manner which assists in the implementation of this alternative.

10. To organize and co-ordinate the local, provincial and national public and private interests affecting Big Lake and its shoreland, by working with local landowners, interest groups, conservationists groups and organizations, affected local industries and the development industry in general.

11. To encourage small and large scale financial investment by the private and public sectors, through the adoption, promotion and implementation of this recreational, commercial and residential development alternative.

12. To encourage environmentally sensitive and related backshore development through the formulation of provincial and regional policies, actions and guidelines; and, the development of local municipal plans, policies, and by-laws.

LAKE USE POLICIES

1. Lake Surface Management

Big Lake has been identified as an important area for the production and staging of waterfowl and appears, at the same time, to have a recreational use potential related to waterfowl, other wildlife and the natural environment in general. In order to conserve natural resources, to allow for some light recreational use related to this resource, and also to promote higher intensity recreational and commercial uses related to the natural environment, (mainly in backshore areas), it is recommended:

(a) that the west bay of Big Lake become the main focus of waterfowl conservation but, at some time, that limited public access be encouraged through the development of observation platforms, towers and trails;

(b) that the east bay of Big Lake become the main focus of recreational use through the development of observation platforms, boardwalks and a nature interpretation centre, allowing the general public to view wildlife/waterfowl in an unobstrusive manner, and also to learn more about ecology in general;

(c) that winter use of the lake for snowmobiling, cross country skiing (or any other type of transportation mode) be directed primarily to the east bay, through the adoption of appropriate municipal by-laws in accord with the Municipal Government Act, and that proper sign posting at public access points be undertaken by municipal and provincial authorities;

(d) that additional public access and a nature interpretation centre be developed at Big Lake's eastern bay, initially in conjunction with the City of St. Albert, since existing public access is currently focused within this municipality, and planning previously undertaken by the City appears to support this type of development; and,

(e) that a firearm discharge by-law prohibiting the discharge of firearms in or adjacent to Big Lake's eastern bay, be formulated by the M.D. of Sturgeon, in accord with the provisions of the Municipal Government Act.

2. Waterfowl Enhancement

Waterfowl counts at Big Lake conducted in 1964, 1976, 1985 and 1986 have shown a general decrease in bird population numbers. In order to improve this situation, and to enhance waterfowl viewing and appreciation opportunities, it is recommended:

(a) that more nesting structures be constructed in both the east and west bays of Big Lake, through the co-operation of local fish and game associations, Ducks Unlimited Canada, Fish and Wildlife Division of Alberta Forestry, Lands and Wildlife through the Wetlands For Tomorrow Program;

(b) that the long term maintenance of these nesting structures become the primary responsibility of the local fish and game associations;

(c) that the current plans by Ducks Unlimited Canada and Fish and Wildlife Division of Alberta Forestry, Lands and Wildlife under the Wetlands For Tomorrow Program, be expedited to develop waterfowl enhancement areas adjacent to both

the east and west bays of Big Lake, providing Big Lake's flood protection function is not hindered; and

(d) that the possibility of developing a waterfowl bait station be investigated by the Wetlands For Tomorrow Program.

LAND USE POLICIES

1. Areas Subject To Flooding

Big Lake acts as a natural storm water retention pond within the Sturgeon River Basin. In order to minimize the negative impact of flooding on local landowners, it is recommended:

(a) that all lands within the 1 in 100 year flood zone be designated in the Land Use By-laws of all four municipalities (in accord with the provisions of the Planning Act), for a use that prohibits all types of permanent or semi-permanent structures; and,

(b) that flood prone lands, in addition to those needed for waterfowl enhancement, be purchased by the provincial government (Alberta Public Works, Supply and Services) to ensure that Big Lake's flood protection function will be maintained in the interest of the Crown, and that floods be confined to these Crown land areas, so that the constant negative impact associated with the flooding of private lands will be eliminated.

2. Other Backshore Lands and Uses

To change the role of Big Lake from a largely unknown natural/agricultural area, to one which not only allows light recreational development related to its natural resources, but also one which allows for related commercial development, requires significant changes in the existing pattern of land use. In order to provide direction to backshore land use change and development in accordance with this alternative, it is recommended:

(a) that all four municipalities, in accord with the provisions of the Planning Act, adopt Area Structure Plans and amend Land Use By-laws, if necessary, to ensure that a complete circulation network as well as a land use change pattern be viewed and developed as a co-ordinated planning approach for the entire Big Lake planning area;

(b) that the four municipalities, in co-operation with local landowners, local and province-wide interest groups, local industry, and provincial and federal government authorities, co-ordinate the development of a circulation network through linking existing easements, securing landowner use/access agreements, and land purchases (when necessary);

(c) that existing municipal and provincial roads and highways be maintained in accord with normal operations, but that future changes and/or expansions be undertaken in accord with the overall circulation network planning and land use change;

(d) that the proposed St. Albert Bypass (a highway designed to cross the Sturgeon River between Big Lake and the developed portion of the City) be constructed with careful consideration of the area's environmental sensitivity;

(e) that the high voltage powerline crossing the Sturgeon River at the outlet of the east bay of Big Lake (within the City of St. Albert) be relocated or buried by the utility company to reduce significantly bird mortality and to improve general aesthetics;

(f) that other utility and energy resource pipelines, powerlines and related facilities be maintained under normal operations, and also that an oil and gas interpretive centre be developed by a private oil company at one of its abandoned wells to facilitate public use and access to the area, in accordance with the overall circulation network;

(g) that all future recreational, commercial and residential development be permitted in accord with established set backs for sour gas facilities, nuisance grounds, feed lots, intensified farm operations and feed lots (see Subdivision Regulation Part 3 AR 132/78, AR 138/79 & 198/79 pursuant to the Planning Act and the Oil and Gas Conservation Act);

(h) that all future land use change proposals be encouraged to locate in areas of moderate to slight limitations to development, and be discouraged in areas with severe or very severe development limitations (see appendix for development limitations map);

(i) that cluster designs and other innovative design concepts be followed for all future residential and intensive recreational developments, to minimize social and environmental impact; especially in those areas attempting to maintain a natural environment setting; and,

(j) that all future land use change proposals be assessed in relation to the area as a whole, which will require co-operation of all affected municipalities, industries, and provincial government departments administering crown owned lands (see implementation section that follows).

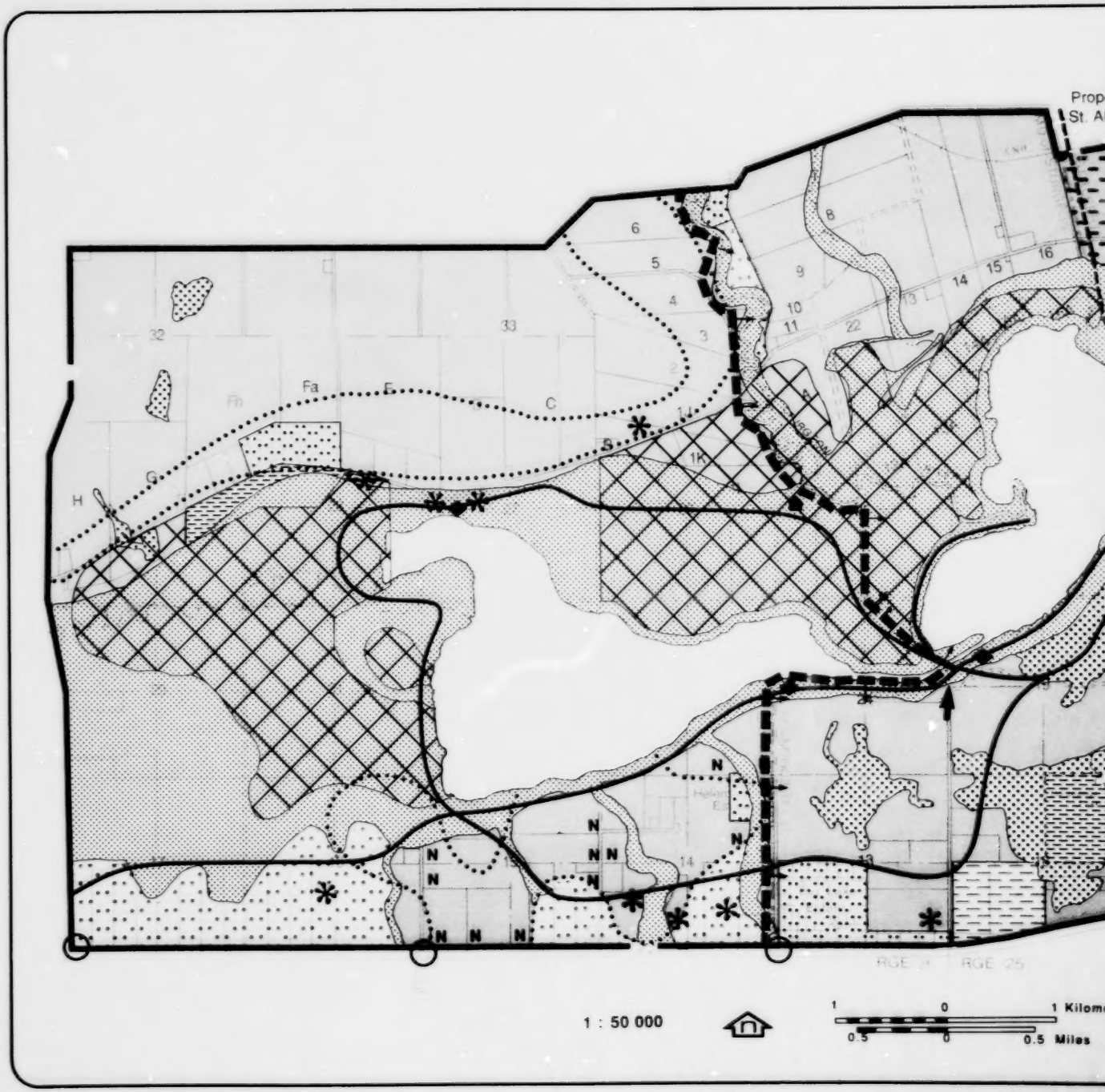
LAND CLASSIFICATION AND ALLOCATION

Map 4 is a graphic expression of Alternative Three: Recreational, Commercial and Residential Development Alternative. The land classifications shown on the map are described in more detail in Appendix 2.

IMPLEMENTATION

The implementation of Alternative Three would require investment in terms of time, action and financial obligation. All are involved from both the private and public sectors. The commitments necessary to implement such a plan are summarized on Table 2. The level of involvement in implementation is outlined on Table 2 by the dot pattern. Full dots meaning an active or high level of involvement; open dots meaning a low level of activity and/or involvement; and, partially filled dots meaning an intermediate stage between the high and low activity/involvement levels.

Municipal implementation responsibility is perhaps a good example to use to explain Table 2. As outlined, municipalities are responsible, (as shown by the filled-in dots), for implementing their portions of the plan through by-law adoption, co-ordinating and perhaps contributing in a realistic financial manner toward boardwalk and trail development, and, planning future roadway development in accordance with the circulation networks proposed. It is a well known fact that local municipal councils do not have the financial resources to invest in such undertakings as wildlife habitat improvement; acquiring flood prone land; or, moving utilities, (such as privately owned powerlines). This is also reflected on Table 2 by leaving blank spaces opposite policies 2(a), 2(b) and 2(g). Municipal implementation responsibility then, has been tailored to the realistic fiscal and personnel limitations of local municipalities. Regarding future by-laws that may be adopted and action plans that may be undertaken by municipalities, it is anticipated that a high level of co-operation between municipalities, and others responsible for implementation, will result. This can be accomplished by an agreement between the affected councils and others; a resolution formally passed by the affected councils; or, a more formal implementation measure such as a Joint General Municipal Plan. Co-ordination and co-operation are the keys to the implementation of the final plan for Big Lake.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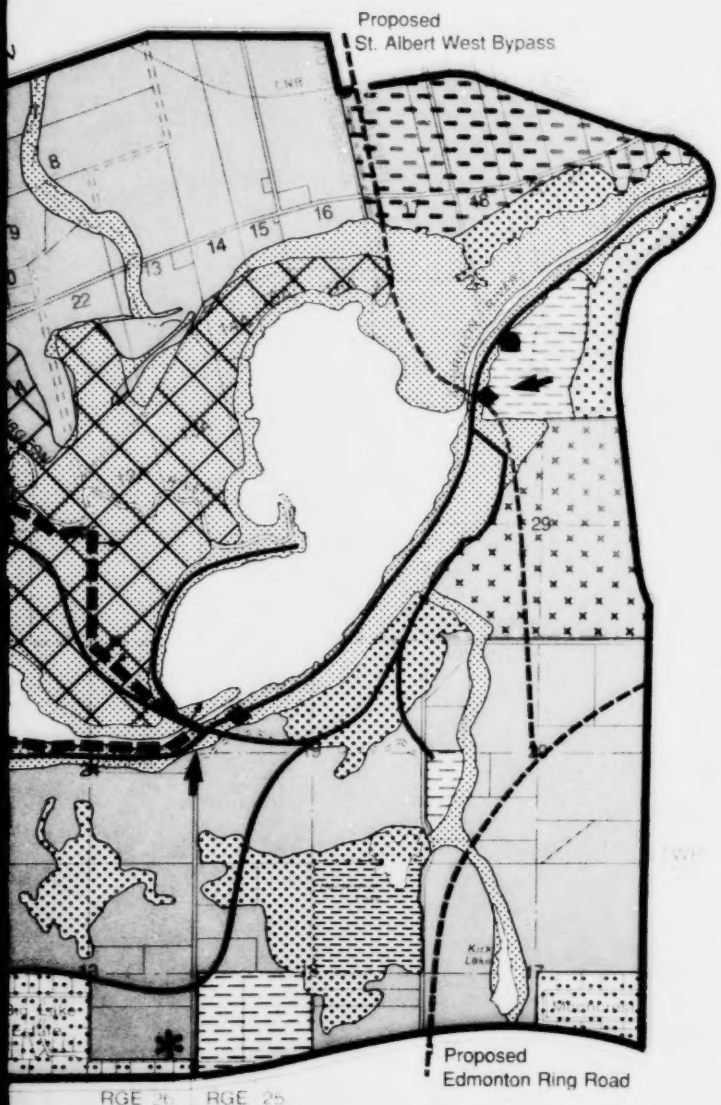


Map 4

ALTERNATIVE THREE

Recreational, Commercial and Residential Development Alternative

- Natural Conservation
- Natural Maintenance
- Waterfowl Enhancement
- Agricultural/Rural
- Agricultural Node
- Agricultural/Residential Reserve
- Agricultural/Industrial Reserve
- Country Residential
- Country Residential Potential
- Commercial Recreation
- Commercial Recreation Potential
- Industrial
- Trail/Boardwalk
- Firearm Discharge Prohibited
- Ground Water Limitation
- Observation Area/Platform
- Interpretation Centre/Wildlife
- Interpretation Centre/Oil & Gas
- Historic Site
- Proposed Interchange
- Vehicular Access

Big Lake

Edmonton Metropolitan Regional Planning Commission

February 1988

POLICY AREA		MUNICIPALITIES	Reg. Plan. Comm.	Prov. Gov't	Fed. Gov't	Landowners	Ducks Unlimited	Local Industry	Local Interest Group	Prov. Interest Group	Non-Profit Organ.	FINANCIAL OBLIGATION ESTIMATE (if applicable, or if information available)
		IMPLEMENTING BODIES AND LEVEL OF INVOLVEMENT										LEGEND Level of Involvement ● High ◐ Medium ○ Low blank - no involvement
Lake Use	1(a)	●	●	○	●	○	●	●	●	●	●	Cost of trails $5 -$100/metre
	(b)	○	●	●	●	○	○	●	●	●	●	Interpretation Centre $1.3 million, trails et cetera same as above
	(c)	●										By-law adoption only
	(d)	○		○	○		○		●	●	●	Poor ag. land $100-500.00/acre, interp. centre 1.3 million approx.
	(e)	●										By-law adoption and enforcement
Waterfowl	2(a)			●			○		●			Nesting structures 30.00 to 250.00 per structure (last 10 years)
	(b)			○			●		●			$30.00 per year per structure
	(c)			●		◐	○		○			Land purchase, poor farmland $100-500.00/acre, dyke construction $500/m
	(d)			●			○					Land lease; no. 1 feed barley 1.20/bushel (1937); 50-160 bushels//day at peak
Land Use	1(a)	●	●									By-law law adoption only
	(b)			●								Land purchase, poor ag. $510.00/acre (3.2 mill. all flood lands)
	2(a)	●	●	●	●	○						By-law adoption and plan preparation
	(b)	●	○	●	◐	○	◐	●	○	○	●	Price/metre: Boardwalks $80-$100; Trails $15-$100 (depending on type)
	(c)	●		●								Normal operations
	(d)			●								Normal operations (minimal extra cost)
	(e)							●				Cost unknown, estimated in tens of thousands of dollars
	(f)							●				Normal operations, plus an interpretive centre ± 1.3 million
	(g)	●	●	○								Subdivision Approval Authority
	(h)	●	●	○	○							Subdivision Approval Authority, Area Structure Plans, By-laws
	(i)	●	●	○	○							Same as above
	(j)	●	○	●	●				●		●	Normal operations (no extra cost)

Table 2: IMPLEMENTATION OF ALTERNATIVE THREE

E V A L U A T I O N

1. Advantages

   (a) The natural environment is maintained whilst the maximum benefit in terms of: recreational and tourist use potential; commercial development; and, residential subdivision is promoted.

   (b) waterfowl habitat improvement is expected to increase the areas waterfowl population.

   (c) The bold statements and directives of alternative three will require enthusiasm as well as financial commitment on behalf of both the private and public sectors, which should result in many economic benefits to the planning area and its population.

2. Disadvantages

   (a) The time and financial commitments required by both the private and public sectors to implement this alternative may be beyond reasonable expectations.

   (b) There are large increases for use of the area by the public at large which may create a severe negative impact.

APPENDICES

APPENDIX 1 Findings and Conclusions of the
Big Lake Background Report: The Management Study

- please note that map references in this appendix are to maps contained in the Management Study, which are not included in these summary statements.
- map 26 is the only map included in this appendix

V. FINDINGS AND CONCLUSIONS

1. Overview

The Big Lake Background Report: The Management Study contains analyses and interpretations of biophysical and landscape/visual and socio-economic information. The information contained in this report is designed to be used as ready-reference material. The Big Lake Alternative Plans and the eventual Final Plan are, and will be, primarily based upon the information analyses and interpretations contained in the management study.

The conclusions that follow have been derived from the analyses and interpretations of the information in this management study, including the written text, key maps and tables. More information, regarding the context from which the conclusions were derived, may be obtained from the main text of the management study and its various cross references.

2. Biophysical Findings and Conclusions

(a) Big Lake

(i) Big Lake is an integral component of the larger Sturgeon River Basin Watershed (see Map 2).

(ii) Big Lake acts as a natural storm water retention pond. It protects the City of St. Albert from flooding, and often doubles in size during spring freshet, resulting in substantial flooded areas adjacent to the lake (see Map 3).

(iii) Big Lake is shallow and has poor water quality for domestic consumption and recreational use (see Map 4).

(b) Topography

(i) Topography varies widely in the Big Lake area, with the south shore of the lake being the most dramatic in terms of local relief (see Map 5).

(c) Climate

(i) The macro-climate of the area is typical of this latitude in Alberta (continental climate). The most interesting aspects of climate are the micro-climates created by the cooler moister north-facing slopes of the south shoreline, and the areas of unseasonal warmth created by flowing springs during all seasons.

(d) Geology

(i) The deeper evaporite and carbonate bedrock formations are responsible for the area's oil and natural gas reserves.

(ii) The near surface bedrock formation, called the Wapiti Formation (Edmonton Group), contains sandstone, mudstone, shale, bentonite, with some ironstone and scattered coal beds.

(iii) Carved into the near surface bedrock are preglacial channels responsible for the sand and gravel deposits known as the Saskatchewan Sands and Gravels; often utilized as a reliable source of groundwater these areas usually act as excellent aquifers.

(iv) The surficial geology of the area, primarily associated with the last era of continental glaciation, is responsible for agricultural soil parent material of high quality. The soil also contains silt, sand, clay, organic muck, marl and till pockets (usually a mixture of sand, gravel and clay).

See Figure 5 for a geological cross-section. The area's geology and associated nonrenewable resources create limitations on future changes.

(e) Soils

(i) Maps 6 and 7 provide a general overview of soils and agricultural capability.

(ii) Map 8 refines the general overview and provides a detailed assessment of the area's agricultural use, as shown by the high values of farmland assessment.

(iii) Map 9 depicts soil capability interpretations, within the City of St. Albert, for: Trails, Camping, Picnicking; Playing Fields; Buildings with Basements; and Agriculture.

(iv) These soil maps and their interpretations provide a definitive scientific basis for future decision-making; existing agricultural use is obviously a very important consideration.

(f) Groundwater

(i) Groundwater yield or quantity varies widely throughout the entire planning area, as shown on Map 10.

(ii) Groundwater quality also varies throughout the planning area, as shown on Map 11.

(iii) The groundwater maps provide direction for the location of future uses that may require the use of groundwater. As shown, some limitations exist.

(g) Vegetation

(i) Vegetation may be assessed in relation to three categories: water related; shoreline; and, upland.

(ii) Within these three categories, limitations to future land use change exist (see Maps 12 and 13).

(h) Wildlife

(i) Waterfowl is the most important type of wildlife supported at Big Lake.

(ii) Waterfowl has been long recognized as an important resource, as evidenced by the numerous studies, classifications, reports, bird counts, hunting and bird watching that have been undertaken or participated in over the years.

(iii) Other important wildlife in the area include: shorebirds, gulls, great blue herons, raptors, small fur bearers, ungulates and some sport fish.

(iv) Maps 14, 16 and 17 outline those areas at Big Lake that are critical for the maintenance of waterfowl.

(v) Map 18 outlines possible waterfowl enhancement areas where habitat may be improved by the impoundment of water, managment of the marsh and installation of nesting structures.

(vi) Map 19 provides an interpretative summary of all important wildlife and wildlife habitats. As outlined on these maps (16, 17, 18, and 19), future planning should avoid disturbance to environmentally sensitive areas and/or habitat, and allow for the possible development of waterfowl enhancement.

(j) Non-renewable Resources

(i) Oil and natural gas are the most important non-renewable resources at Big Lake.

(ii) Existing oil and natural gas reserves are expected to last for at least another 10 years with conventional recovery methods and perhaps another twenty to twenty-five years with enhanced recovery methods.

(iii) Sand, gravel and marl seem to have a limited potential for future extractive activities.

3. Landscape/Visual and Socio-Economic Findings and Conclusions

(a) Landscape/Visual Analyses and Interpretations

(1) The Big Lake area has a high potential for development that takes advantage of its landscape character and visual beauty.

(ii) Maps 20 and 21 have been prepared to assist in future design considerations and to indicate the areas with the best visual quality.

(b) Circulation Analyses and Interpretations

(i) Big Lake is currently used, largely on an informal basis, for a number of vehicular and pedestrian-related activities (see Map 22).

(ii) Map 23 has been prepared to assist in design and overall concept considerations of a comprehensive circulation network at Big Lake.

(c) Land Use Analyses

(i) Big Lake has a very rich and diversified history which is directly linked to one of the first European settlements in this part of Western Canada. This factor is an important consideration in future planning, especially in relation to the river lot system of survey and development and the cultural heritage as reflected in historical sites and buildings (see Map 24).

(ii) Existing land use naturally affects future plans. Map 25 provides insight with regard to the existing land use pattern in the area and, indirectly, indicates areas with a higher use change potential (when factors such as conflicting adjacent uses, vacant lands, ownership and municipal jurisdictions are considered).

(d) Existing Plans, Policies and By-laws

(i) The many statutes affecting the lake and its shoreland, as well as the existing plans, policies and by-laws of the local municipalities and the planning commission, are very important to any proposed future land use change scenarios. Tables 3 and 4 summarize this information.

(e) Questionnaire Information

(i) The Big Lake Landowners' Questionnaire has provided planners with humanistic values, as well as scientific facts. Both facts and values must be incorporated into the overall planning process. Figures 7 to 13 summarize those facts and values that should be evaluated prior to future change alternatives being formulated and final plan decisions being made.

(f) Future Demands

(i) The two public meetings, and the briefs and comments by the landowners, the public at large, and representatives of the private and public sectors, have provided direction for future planning through the statement of future demands and expectations. This information has been used to formulate alternative plan goals and objectives and to assist in the development of more specific implementation measures. These ideas and statements are contained in Appendices 3, 4 and 5 of the Management Study.

(ii) Future demands and expectations have been stated directly through the landowners' questionnaire. Figures 10 and 13 highlight these demands.

(iii) The Metropolitan Edmonton population is expected to be in the neighbourhood of

one million people by the year 2001. This population growth (from its current 760,000) will place recreational use demands upon Big Lake, probably in the form of nature viewing, hiking, walking, photography and picnicking.

(iv) Future demands are also anticipated in the following areas: increased country residential development; the development, through reserve enhancement, of oil and gas resources; marl extraction, although this possibility appears remote at this time, expanded agricultural use and/or intensity; and as a transportation/utility corridor.

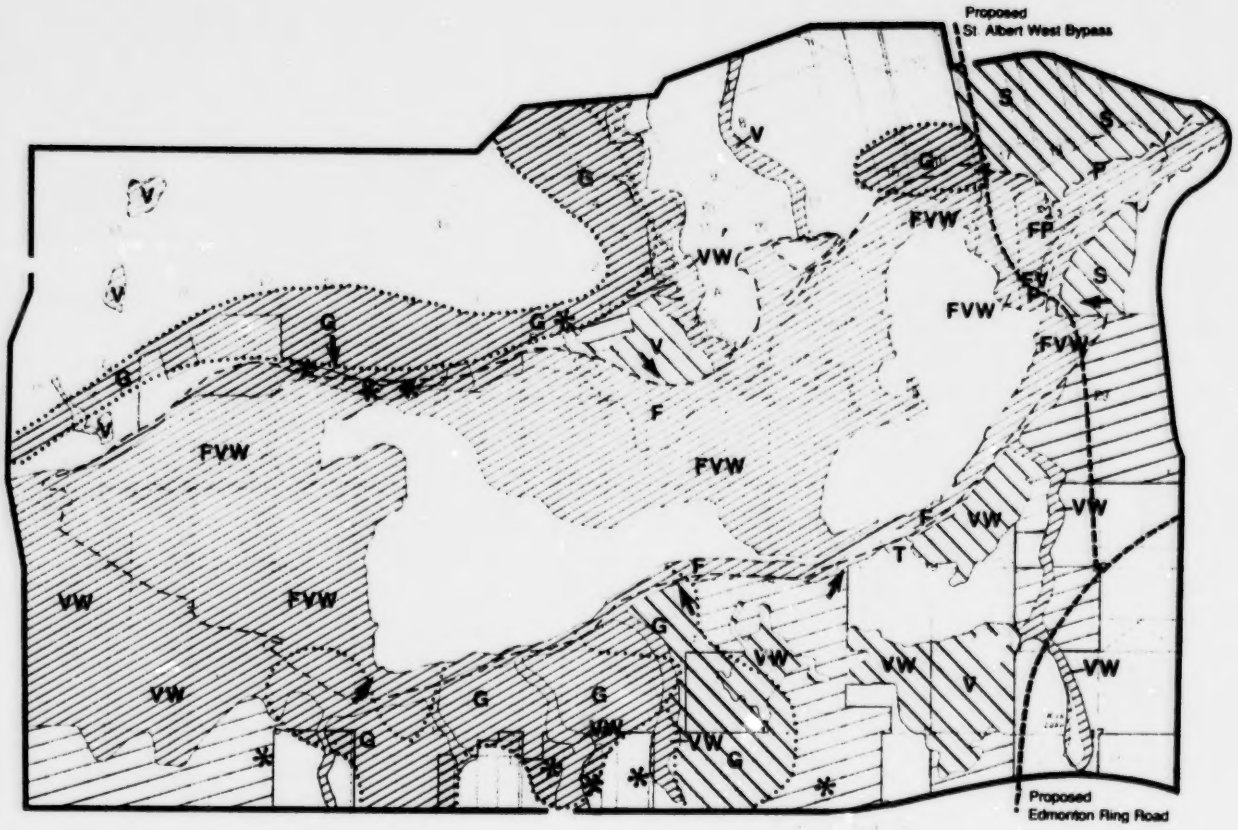
4. Putting It Altogether

The information contained in the management study has now been analyzed, interpreted and summarized. Viable and appropriate alternative plans, and an eventual final plan, for Big Lake and its shoreland must reflect the analyses and interpretations of that information. In order to assemble this information into a meaningful format, the following criteria have been used:

- overall guidance provided by the study goals, and the more definitive goals and objectives formulated for each alternative plan;
- a summary map which outlines limitations, constraints and opportunities;
- a summary table which graphically depicts some limitations to future development; and,
- written text information which cannot be easily expressed in a map or table summary.

(a) The Map Summary

By use of the overlay or sieve mapping technique, a composite map of land use potential has been produced (see Map 26). This map combines a series of maps from the management study. A complex pattern of irregularly shaped areas is produced by the combination of these maps. In order to present a readily understandable summary map, most of this information has been generalized. Three development limitation levels: very severe; severe; and moderate to slight are shown, along with areas of high agricultural capability and existing use. The limiting factors depicted on Map 26 are interpretations made from the following maps:



Map 26

DEVELOPMENT LIMITATIONS AND AGRICULTURE

DEVELOPMENT LIMITATIONS
- Very Severe
- Severe
- Moderate to Slight

AGRICULTURE
- High Agricultural Capability and Existing Use

LIMITING FACTORS
- F Flood Prone
- T Steep Slope
- V Vegetation Sensitivity
- W Wildlife/waterfowl Sensitivity
- S Soil Limitations
- P Prehistoric Site
- G Groundwater Quality
- Groundwater Boundary
- 1:100 Year Flood Boundary
- Surficial Boundary
- Historic site
- Vehicular Access Potential

Big Lake

1 : 50 000

1 0 1 Kilometres
0.5 0 0.5 Miles

Edmonton Metropolitan Regional Planning Commission

February 1988

F - Flood Prone, from Map 3
T - Steep Slope, from Map 5
P - Prehistoric Site and * - Historic Sites, from Map 24
V - Vegetation Sensitivity, from Map 13
W - Wildlife Sensitivity, from Maps 16, 17 and 19 .
G - Groundwater Quality , from Map 11
S - Soil limitations from Map 9. Agricultural Capability and existing use is an interpretation made from Map 8, Farmland Assessment and Map 9 soil Capability Interpretations in the City of St. Albert.

The formulation of Map 26 requires one to make trade-off decisions. For example, a particular parcel of land had a very high farmland assessment rating, but was also within the outer limits of the 1 in 100 year flood zone of Big Lake. A trade-off decision was made to show this area as susceptible to flooding on the summary map. It's high farmland assessment rating, therefore, was over shadowed by its susceptibility to flooding.

A series of similar trade-off decisions were made during the formulation of Map 26. In order to assist the reader in understanding this map, the following should be kept in mind.

(i) Farmland Assessment (from Map 8) has been used to outline Agricultural Areas on Map 26, by showing only those lands with a rating of 42% or greater and not designated for other uses in existing Municipal plans, policies or by-laws.

(ii) Soil Capability Ratings (Map 9) within the City of St. Albert, has been used to determine land use change potential and to assess agricultural capability within the City.

(iii) Groundwater Quality (Map 11), assisted in determining land use change potential limitations, especially in areas that do not have a piped water supply and will require the use of groundwater for future land use change.

(iv) Vegetation Sensitivity (Map 13) was used to determine land use change potential throughout the entire planning area.

(v) Maps 16 to 19 were used in conjunction with the Vegetation Sensitivity map, to accurately determine important fish and wildlife habitats and to ensure that all land use change potential was either in accord with the identified habitat, or avoided sensitive habitats or vegetation stands.

(vi) Maps 20-23 were used to outline the specific points of circulation/access potential on Map 26.

(vii) Historical Resources (from Map 24) assisted in determining land use change potential limitations, mainly on those specific sites that contained significant historical and prehistorical resources.

(viii) Lastly, Existing Land Use (from Map 25) was used as the base map for Map 26 to aide in avoiding potential land use conflicts and to assist in accurately determining the existing pattern of use (for assessing future change potential).

(b) The Table Summary

In addition to the conclusions expressed in the summary map, there are others which can only be stated in a summary table. Table 5 has been prepared to outline some of Big Lake's land use change potential limitations.

(c) Written Summary

There are additional conclusions in the Management Study which cannot be expressed readily in either a summary map or table, but which have an equally important effect upon future planning. This list includes, from the summary section,

(h) Wildlife (i), (ii) and (iii); (a) Landscape/Visual Analyses and Interpretations (i); (d) Existing Plans, Policies and by-laws (i); (e) Questionnaire Information (i); (f) Future Demands (i), (ii), (iii) and (iv).

5. Summary

The preparation of a comprehensive management plan for Big Lake and its surrounding shoreland area involves the collection, analyses and interpretation of diverse sources of information. This report attempts to incorporate and assess as many sources of information as possible. It is anticipated that successful future planning for the area will be based upon the information contained herein.

MANAGEMENT STUDY FINDINGS AND CONCLUSIONS (that cannot be easily expressed in a summary map)	LIMITATIONS ON FUTURE LAND/LAKE USE CHANGE HIGH — MEDIUM — LOW
1. Big Lake is an integral component of the larger Sturgeon River Basin Watershed.	
2. Big Lake is shallow and has poor water quality (for domestic consumption or recreational use).	
3. Macro, and especially micro climate, affect vegetation associations and wildlife.	
4. Geologically, Big Lake should be viewed as a thin veneer of water closely tied to groundwater and other natural resources.	
5. Non-renewable Resources such as oil and natural gas will be actively extracted for at least the next 15 years.	

Table 5 SOME OF BIG LAKE'S LAND USE CHANGE POTENTIAL LIMITATIONS

APPENDIX 2 LAND CLASSIFICATIONS

LAND CLASSIFICATIONS

The following land classifications are applicable to all three alternative plans for Big Lake. Since the alternative plans are comprised of different approaches, some plans have more land classifications shown than others.

NATURAL CONSERVATION

Purpose:

- to identify areas of very severe development limitations due to their constant flooding, steep slopes and/or the presence of sensitive vegetation and wildlife
- to ensure that future use and development of these areas is in harmony with its capacity for flooding and environmental sensitivity
- to place these areas in a land use class which identifies lack of development potential
- to allow for extensive recreational development which is compatible with development limitations

Uses Allowed: (subject to municipal land use by-law)

- general (extensive) agricultural uses involving the production of forage crops (in some instances) and the raising of livestock (in some instances)
- miscellaneous uses associated with agriculture
- extensive recreational development which may include boardwalks, trails, observation platforms, etc.

Other Provisions:

- permanent buildings and/or structures prohibited
- subdivision of parcels allowed, providing all types of development (as defined in the Planning Act) are strictly controlled in accordance with flooding capacity and environmental sensitivity.

NATURAL MAINTENANCE

Purpose:

- to identify areas of severe development potential due to the presence of prehistoric sites, soil limitations, and/or sensitive vegetation and wildlife
- to ensure that future use and development of these areas is in harmony with its identified sensitivity relating to prehistoric sites, soils, vegetation and/or wildlife
- to place these areas in a land use class which identifies these limitations on development
- to allow for all types of development in these areas, providing it is planned in accordance with the identified sensitivities

Uses Allowed:

- general (extensive) agricultural uses involving the production of forage crops (in some instances) and the raising of livestock (in some instances)
- miscellaneous uses associated with agriculture
- extensive recreational development which may include boardwalks, trails, observation platforms, etc.

Other Provisions:

- permanent buildings and structures are allowed providing they are planned in accord with the identified sensitivity
- subdivision of parcels allowed, providing all types of development (as defined in the Planning Act) are designed and/or controlled in accordance with the identified sensitivity

WATERFOWL ENHANCEMENT

Purpose:

- to identify areas that are being considered, through the Wetlands For Tomorrow Program, for possible water ponding and/or habitat improvement for waterfowl

Uses Allowed

- general (extensive) agricultural uses involving the production of forage crops (in some instances) and the raising of livestock (in some instances)
- miscellaneous uses associated with agriculture
- extensive recreational development which may include boardwalks, trails, observation platforms, etc.

Other Provisions:

- permanent buildings and/or structures prohibited
- subdivision of parcels allowed, providing all types of development (as defined in the Planning Act) are strictly controlled in accordance with flooding capacity and environmental sensitivity.

AGRICULTURAL/RESIDENTIAL RESERVE

Purpose:

- to identify and conserve agricultural areas for short term agricultural use, until such time as those lands are required for future urban residential development
- to minimize conflicts between agricultural and non-agricultural uses
- to place these areas in a land use class which identifies agricultural capability and, at the same time, maintains a longer term urban residential use perspective

Uses Allowed: (subject to municipal land use by-law)

- general (extensive) agricultural uses involving the production and harvesting of field crops and raising of livestock and other animals
- agricultural product storage and service facilities which relate to the individual farm unit
- transportation, communication, public utilities and small scale, 16.2 hectares or less (40 acres) resource extracting activities and subsequent reclamation measures
- miscellaneous uses associated with agriculture
- urban residential development at the discretion of the Municipal Council

Uses Which may be Allowed: (subject to site specific evaluation and municipal land use by-law)

- generally, no intensive agricultural activities or expansion of existing intensive activities will be permitted within the planning area. If the proposed intensive agricultural activity can be shown to cause no increase in traffic, odour, noise or pollution which would adversely affect the lake or lakeshore environment or the existing development, the Municipal Council may consider such activities as a discretionary use within the planning area. Existing provincial and regional policies regarding intensive agricultural activities will pertain to such a proposal.

Other Provisions:

- separation of one residential site per quarter section, not previously subdivided will be allowed; this subdivision should contain only land necessary for a residential site and should not exceed 1.2 hectares (3 acres) in size or the area necessary to include farmstead buildings and shelter belts
- subdivision of parcels isolated from the remainder of the quarter section by natural or man-made features may be permitted, with the remainder of the quarter section considered unsubdivided.
- subdivision for Urban Residential use at the discretion of the Municipal Council

AGRICULTURAL/INDUSTRIAL RESERVE

Purpose

- to identify and conserve agricultural areas for short term agricultural use, until such time as those lands are required for future urban industrial development
- to minimize conflicts between agricultural and non-agricultural uses
- to place these areas in a land use class which identifies agricultural capability and, at the same time, maintains a longer term urban industrial use perspective

Uses Allowed: (subject to municipal land use by-law)

- general (extensive) agricultural uses involving the production and harvesting of field crops and raising of livestock and other animals
- agricultural product storage and service facilities which relate to the individual farm unit
- transportation, communication, public utilities and small scale, 16.2 hectares or less (40 acres) resource extracting activities and subsequent reclamation measures
- miscellaneous uses associated with agriculture
- urban industrial development at the discretion of the Municipal Council

Uses Which may be Allowed: (subject to site specific evaluation and municipal land use by-law)

- generally, no intensive agricultural activities or expansion of existing intensive activities will be permitted within the planning area. If the proposed intensive agricultural activity can be shown to cause no increase in traffic, odour, noise or pollution which would adversely affect the lake or lakeshore environment or the existing development, the Municipal Council may consider such activities as a discretionary use within the planning area. Existing provincial and regional policies regarding intensive agricultural activities will pertain to such a proposal.

Other Provisions:

- separation of one residential site per quarter section, not previously subdivided will be allowed; this subdivision should contain only land necessary for a residential site and should not exceed 1.2 hectares (3 acres) in size or the area necessary to include farmstead buildings and shelter belts
- subdivision of parcels isolated from the remainder of the quarter section by natural or man-made features may be permitted, with the remainder of the quarter section considered unsubdivided.
- subdivision for Urban Industrial use at the discretion of the Municipal Council

AGRICULTURAL/RURAL

Purpose:

- to identify areas of high agricultural capability and existing use for future agricultural production
- to minimize conflicts between agricultural and non-agricultural uses
- to place these areas in a land use class which identifies that agricultural capability and conserves the parcels for future agricultural production

Uses Allowed: (subject to municipal land use by-law)

- general (extensive) agricultural uses involving the production and harvesting of field crops and raising of livestock and other animals
- agricultural product storage and service facilities which relate to the individual farm unit

- transportation, communication, public utilities and small scale, 16.2 hectares or less (40 acres) resource extracting activities and subsequent reclamation measures
- miscellaneous uses associated with agriculture

Uses Which may be Allowed: (subject to site specific evaluation and municipal land use by-law)

- generally, no intensive agricultural activities or expansion of existing intensive activities will be permitted within the planning area. If the proposed intensive agricultural activity can be shown to cause no increase in traffic, odour, noise or pollution which would adversely affect the lake or lakeshore environment or the existing development, the Municipal Council may consider such activities as a discretionary use within the planning area. Existing provincial and regional policies regarding intensive agricultural activities will pertain to such a proposal.

Other Provisions:

- separation of one residential site per quarter section, not previously subdivided will be allowed; this subdivision should contain only land necessary for a residential site and should not exceed 1.2 hectares (3 acres) in size or the area necessary to include farmstead buildings and shelter belts
- subdivision of parcels isolated from the remainder of the quarter section by natural or man-made features may be permitted, with the remainder of the quarter section considered unsubdivided.

AGRICULTURAL NODE

Purpose:

- identical to the agricultural conservation class except that this node of agricultural use is physically separate from the larger areas of agricultural activity within the County of Parkland, the area therefore, has a reduced priority for long term agricultural conservation.

COUNTRY RESIDENTIAL

Purpose:

- to identify existing country residential development
- uses, densities and development subject to municipal land use by-laws

COUNTRY RESIDENTIAL POTENTIAL

Purpose:

- to identify areas of marginally productive agricultural land which has substantial areas without severe limitations to development, and has a high recreational or scenic value with good capability for future residential development
- to identify areas of residential development potential
- to place these areas of potential development into a land use class which identifies those characteristics

Uses and Densities Allowed: (subject to municipal land use by-laws)

- existing residential and other rural non-farm uses
- a subdivision creating lots a minimum of 1 acre in size with the maximum size to be determined on a site specific basis consistent with existing municipal by-laws
- for future residential subdivision and development, a range of 24 to 36 lots per quarter section will be used as a guideline to determine quarter section densities
- construction of roads, buildings or improvements associated with any proposed residential development will only be permitted in areas with no severe limitations for such development

Other Provisions:

- general (extensive) agricultural uses involving the production and harvesting of field crops and raising of livestock and other animals
- agricultural product storage and service facilities which relate to the individual farm unit
- transportation, communication, public utilities and small scale (16.2 hectares (40 acres) or less), resource extraction activities and subsequent reclamation measures
- miscellaneous uses associated with agriculture
- country residential development at the discretion of the Municipal Council

COMMERCIAL RECREATION

Purpose:

- to identify areas with slight to moderate limitations for recreational use, suitable for recreational development
- to ensure a portion of the study area is dedicated to land uses which provide recreational opportunities to the general public
- to place these areas of potential development in a land use classification which identifies that capability and reserves future lands for commercial recreation purposes
- to identify existing areas

Uses Allowed: (same as commercial recreation potential)

COMMERCIAL RECREATION POTENTIAL

Purpose:

- to identify areas with slight to moderate limitations for recreational use, suitable for recreational development
- to ensure a portion of the study area is dedicated to land uses which provide recreational opportunities to the general public
- to place these areas of potential development in a land use classification which identifies that capability and reserves future lands for commercial recreation purposes

Uses Allowed: (subject to municipal land use by-law)

- commercial recreation uses which offer recreation opportunities to the general public, including campgrounds and golf courses
- construction of buildings, roads and improvements to facilitate the operation of commercial recreation uses
- development of a residential site in conjunction with the operation of the commercial recreation facility

Other Provisions:

- proposed commercial recreation developments will be assessed by the municipality according to the capability of the site, the appropriateness of the use to the particular location and the potential impact of the proposed use on other existing land uses in the area
- development approval will require evidence that the construction and operation of the proposed development will not contribute to a deterioration in the environmental quality of the lake or shoreland environment

RECREATION

Purpose:

- to identify existing recreational development
- uses, densities and development subject to municipal land use by-laws

INDUSTRIAL

Purpose:

- to identify areas with the potential for future industrial development
- to identify areas of existing industrial development
- to place these areas in a land use classification which identifies potential and existing uses

Uses Allowed: (subject to municipal land use by-law)

- all types of industrial uses from light industrial park development to heavy resource extractive activities and related facilities

Other Provisions:

- any expansion, extension, or redevelopment of existing use or uses or any development of new uses which will require the construction of roads, buildings or improvements, removal of vegetation or disturbance of soil, shall require a development permit

- the affected municipality will assess any changes to existing or potential uses requiring a development permit as to their general suitability to the proposed location and approval may require evidence that there will not be any environmental degredation to the lake or shoreland.

APPENDIX 3 DREDGING OF BIG LAKE

Dredging, the bringing up and clearing away of soil and other deposits found at the bottom of Big Lake and the Sturgeon River, has been the subject of many discussions. However, there have been very few exhaustive scientific studies to substantiate the many opinions that have been expressed (both pro and con).

The Alternative Plans that have been formulated for Big Lake and its shoreland are based upon all of the available scientific studies, as well as all of the available opinions that have been expressed about the lake and area. Scientific facts as well as humanistic values then, have been used to develop the Alternative Plans.

After evaluating all of the given studies and opinions, it was decided that dredging Big lake and/or the the Sturgeon River would not be proposed at this time. This decision was based upon the following:

1. the available scientific studies relating to bottom deposits, water balance, flow regimes, groundwater discharge and recharge, and geology and ecology in general, favour the opinion that dredging should not be undertaken; and,

2. the costs associated with undertaking scientific studies (primarily based upon an intensive drilling and core analysis programmes) are prohibitive, from both the private and public sector viewpoints.